UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/712,133	11/15/2000	Christian Braun	ALL.008	8856

7590 12/18/2003

JONES VOLENTINE, L.L.C.
SUITE 150
12200 SUNRISE VALLEY DRIVE
RESTON, VA 20191

EXAMINER	
DAVIS, TEMICA M	

ART UNIT	PAPER NUMBER
2681	6

DATE MAILED: 12/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/712,133	BRAUN ET AL.	
	Examiner	Art Unit	
	Temica M. Davis	2681	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 November 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *5*.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5 and 8-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Krayeski et al (Krayeski), U.S. Patent No. 5,471,146.

Regarding claim 1, Krayeski discloses an antenna device for transmitting and receiving radio waves, connectable to a radio communication device, and comprising: a transmitter section and a receiver section, said receiver section including: a receiving antenna structure switchable between a plurality of antenna configuration states, each antenna configuration state being distinguished by a set of radiation related parameters; a switching device capable of selectively switching said antenna structure between said plurality of antenna configuration states; a measuring device capable of receiving a first measure representing a reflection coefficient as measured at said transmitter section; and a control device capable of controlling said switching device of said receiver section, wherein said selective switching of the antenna device between said plurality of antenna configuration states is effected, in response to said first measure representing said reflection coefficient (col. 2, line 65-col. 3, line 37, col. 4, lines 17-59).

Regarding claim 2, Krayeski discloses the antenna device as claimed in Claim 1, wherein said measuring device is capable of repeatedly receiving a first measure representing the reflection coefficient. (col. 2, line 65-col. 3, line 37, col. 4, lines 17-59).

Regarding claim 3, Krayeski discloses the antenna device as claimed in Claim 2, wherein said control device is adapted to control said switching device to switch between said plurality of antenna configurations states in response to said repeatedly received first measure representing said reflection coefficient (col. 2, line 65-col. 3, line 37, col. 4, lines 17-59).

Regarding claim 4, Krayeski discloses the antenna device as claimed in Claim 1, wherein each of said plurality of antenna configuration states is adapted for use of the antenna device in said radio communication device in a respective predefined operation environment (col. 2, lines 26-31).

Regarding claim 8, Krayeski discloses the antenna device as claimed in Claim 1, wherein said antenna device is arranged for switching frequency band in response to said first received measure representing the reflection coefficient (col. 3, lines 27-37, col. 4, lines 17-59).

Regarding claim 9, Krayeski discloses the antenna device as claimed in Claim 1, wherein said antenna device is arranged for connection and disconnection of reception diversity functionality, in response to said first received measure representing the reflection coefficient (col. 3, lines 27-37, col. 4, lines 17-59).

Regarding claim 10, Krayeski discloses the antenna device as claimed in Claim 1, wherein said transmitter section further includes a transmitting antenna structure

switchable between a plurality of transmitting antenna configuration states, said plurality of transmitting antenna configuration states being distinguished by a set of radiation related parameters; and a transmitter switching device for selectively switching said transmitting antenna structure between said plurality of transmitting antenna configuration states, wherein said control device is adapted to control said transmitter switching device of said transmitter section, and wherein said selective switching of said transmitting antenna structure between said plurality of antenna configuration states is in response to said first received measure representing the reflection coefficient (col. 2, line65-col. 3, line 37, col. 4, lines 17-59).

Regarding claim 11, Krayeski discloses the antenna device as claimed in Claim 1, wherein said control device is adapted to control at least said switching device of said receiver section to selectively switch said receiving antenna structure between said plurality of antenna configurations states in response to said first received measure representing said reflection coefficient exceeding a threshold value (col. 3, line 38-col. 4, line 59).

Regarding claim 12, Krayeski discloses the antenna device as claimed in Claim 1, wherein said control device is adapted to control at least said switching device of said receiver section to selectively switch the receiving antenna structure through said plurality of antenna configuration states; said measuring device is adapted to receive a respective measure representing the reflection coefficient for each antenna configuration state; and said control device is further adapted to control said switching

device of said receiver section to selectively switch said receiving antenna structure to one of said plurality of antenna configuration states with a lowest measure representing said reflection coefficient, in response to said first received measure representing a reflection coefficient exceeding a threshold value (col. 3, line 39-col. 4, line 59).

Regarding claim 13, Krayeski discloses the antenna device as claimed in Claim 1, wherein said control device compares said first received measure representing said reflection coefficient with a previously received measure representing said reflection coefficient, and said control device is adapted to control at least said switching device of said receiver section to selectively switch said receiving antenna structure between said plurality of antenna configurations states in response to said comparison (col. 4, line 60-col. 5, line 3).

Regarding claim 14, Krayeski discloses the antenna device as claimed in Claim 1, wherein said control device includes a look-up table with absolute or relative reflection coefficient measure ranges, each of said reflection coefficients being associated with one of said plurality of antenna configuration states, and wherein said control device is arranged to refer to said look-up table to control at least the switching device of said receiver section (col. 4, line 60-col. 5, line 3).

Regarding claim 15, Krayeski discloses the antenna device as claimed in Claim 1, wherein at least said plurality of antenna configuration states comprise different numbers of connected receiving antenna elements (figures 1 and 2).

Regarding claim 16, Krayeski discloses the antenna device as claimed in Claim 1, wherein said plurality of antenna configuration states comprise differently arranged feed connections (figures 1 and 2).

Regarding claim 17, Krayeski discloses the antenna device as claimed in Claim 1, wherein at least said plurality of antenna configuration states comprise differently arranged RF ground connections (figures 1 and 2).

Regarding claim 18, Krayeski discloses the antenna device as claimed in Claim 1, wherein said control device is arranged in said receiver section (figures 1-3).

Regarding claim 19, Krayeski discloses the antenna device as claimed in Claim 1, wherein said control device comprises a central processing unit and a memory for 5 storing antenna configuration data (figure 3).

Regarding claim 20, Krayeski discloses the antenna device as claimed in Claim 1, wherein said switching device comprises a microelectromechanical system (MEMS) switch device (figure 1).

Regarding claim 21, Krayeski discloses the antenna device as claimed in Claim 1, wherein said antenna structure comprises a switchable antenna element chosen from the group inherently consisting essentially of meander, loop, slot, patch, whip, spiral, helical and fractal configurations figure 1).

Regarding claim 22, Krayeski discloses an antenna device as recited in claim 1, wherein said radiation related parameters include at least one of resonance frequency input impedance, bandwidth, radiation pattern, gain, polarization and near field pattern (col. 4, lines 24-53).

Regarding claim 23, Krayeski discloses an antenna device as recited in claim 10, wherein said radiation related parameters include at least one of resonance frequency, input impedance, bandwidth, radiation pattern, gain, polarization and near field pattern (col. 4, lines 24-53).

Regarding claim 24, Krayeski discloses an antenna device connectable to a radio communication device, comprising: transmitter and receiver sections, said transmitter section including an input for receiving a first RF signal from a transmitter circuitry of said radio communication device, a power amplifier for amplifying said received RF signal, and a transmitting antenna element for receiving said amplified signal and for radiating RF waves in dependence thereof; and said receiver section including an antenna structure switchable between a plurality of antenna configuration states, each of said configuration states being distinguished by a set of radiation related parameters, a switching device for selectively switching said antenna structure between said plurality of antenna configuration states, a low noise amplifier for amplifying said received second signal, and an output for outputting said amplified second signal to a receiver circuitry of said radio communication device; a measuring device capable of receiving a measure representing the reflection coefficient as measured at the transmitter section; and a control device capable of controlling the switching device of said receiver section in response to said measure representing the reflection coefficient (col. 2, line 65-col. 3, line 37, col. 4, lines 17-59).

Regarding claim 25, Krayeski discloses a method for transmitting and receiving electromagnetic waves, the method comprising: receiving a measure representing a

reflection coefficient; and controlling a switching device to selectively switch an antenna structure between a plurality of antenna configuration states in response to said measure representing the reflection coefficient, each of said configuration states being distinguished by a set of radiation related parameters (col. 2, line 65-col. 3, line 37 and col. 4, lines 17-59).

Regarding claim 26, Krayeski discloses a method as recited in claim 25, wherein the set of radiation related parameters include at least one of resonance frequency, impedance, radiation pattern, polarization and bandwidth (col. 4, lines 24-53).

Regarding claim 27, Krayeski discloses the method as claimed in Claim 25, further comprising receiving a first measure representing the reflection coefficient repeatedly (col. 2, line 65-col. 3, line 37, col. 4, lines 17-59).

Regarding claim 28, Krayeski discloses the method as claimed in Claim 26, further comprising controlling said switching device to switch between said plurality of antenna configurations in response to said repeatedly received first measure representing said reflection coefficient during use of said antenna device in a radio communication device, so as to dynamically adapt said antenna device to objects in the vicinity of said radio communication device (col. 2, line 65-col. 3, line 37, col. 4, lines 17-59).

Regarding claim 29, Krayeski discloses the method as claimed in Claim 25, wherein each of said plurality of antenna configuration states is adapted for use of the antenna device in said radio communication device in a respective predefined operation environment (col. 2, lines 26-31).

Regarding claim 30, Krayeski discloses the method as claimed in Claim 25, further comprising switching frequency bands in response to said first received measure representing said reflection coefficient (col. 3, lines 10-37).

Regarding claim 31, Krayeski discloses the method as claimed in Claim 25, further comprising connecting or disconnecting reception diversity functionality, in response to said first received measure representing the reflection coefficient (col. 3, lines 27-37, col. 4, lines 17-59).

Regarding claim 32, Krayeski discloses the method as claimed in Claim 25, further comprising controlling the switching device of said receiver section to selectively switch said receiving antenna structure between said plurality of antenna configurations states in response to said first received measure representing said reflection coefficient's exceeding a threshold value (col. 3, line 38-col. 4, line 59).

Regarding claim 33, Krayeski discloses the method as claimed in Claim 25, in response to said first received measure representing said reflection coefficient's 5 exceeding a threshold value, further comprising: controlling the switching device of said receiver section to selectively switch the receiving antenna structure through said plurality of antenna configuration states; receiving a respective measure representing the reflection coefficient for each antenna configuration state; and controlling the switching device of said receiver section to selectively switch the receiving antenna structure to the antenna configuration state with the lowest measure representing the reflection coefficient (col. 3, line 38-col. 4, line 59).

Regarding claim 34, Krayeski discloses the method as claimed in Claim 25, further comprising comparing said first received measure representing said reflection coefficient with a previously received measure representing said reflection coefficient, and controlling the switching device of said receiver section to selectively switch said antenna structure between said plurality of antenna configurations states in response to said comparison (col. 4, line 60-col. 5, line 3).

Regarding claim 35, Krayeski discloses the antenna device as claimed in Claim 25, further comprising storing a look-up table with absolute or relative reflection coefficient measure ranges, each of said absolute or relative reflection coefficients being associated with a respective antenna configuration state, and referring to said look-up table for controlling at least said switching device (col. 4, line 60-col. 5, line 3).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krayeski).

Regarding claims 5-7, Krayeski discloses the antenna device as claimed in Claim 4 as described above. Krayeski, however fails to specifically disclose different positions in which the phone is operable. The examiner contends, however, that it is well known in

the art that phones are designed to be operable in many locations with respect to the users body, such as the users waist, pocket, talk position, etc,. Therefore, at the time of invention, it would have been obvious to a person of ordinary skill in the art to adapt the phone to be used in these various positions to enhance the performance of the phone.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Pietsch et al, U.S. Patent No. 6,118,409, discloses a method and device for inspecting at least one antenna branch.

Imanishi, U.S. Patent No. 4,958,382, discloses a radio transceiver apparatus for changing over between antennas.

Milam, U.S. Patent No. 5,794,145, discloses a mobile device multiband antenna system.

Kraiem et al, U.S. Patent No. 6,370,369, discloses a network device and method employing omni-directional and directional antennas.

Weerackody et al, U.S. Patent No. 5,689,439, discloses a switched antenna diversity transmission method and system.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Temica M. Davis whose telephone number is (703) 306-5837. The examiner can normally be reached on 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (703) 305-4040. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.

TMD
December 13, 2003

Temica M.D.

TEMICA M. DAVIS
PATENT EXAMINER